

## Co-evolution in social networks

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### Abstract

The general concept of entangled co-evolution of agent actions and formation of social networks is discussed and motivated in the context of processes of social differentiation in cooperation dynamics [1, 2]. These concepts are applied to studies of cultural differentiation in the framework of Axelrod's model. A nonequilibrium transition between globalization and cultural polarization found in this model is known not to be robust against the action of cultural drift (noise) [3, 4]. We study [5] how network homophily (co-evolution) modifies these results: The globalization-polarization transition has a different nature in the co-evolving network, with the network breaking up into physical groups and with regions in which cultural and network dynamics are decoupled. On the other hand, cultural drift becomes inefficient in a co-evolving network, so that polarized states of cultural diversity emerge as a stable outcome of local processes of homophily and social influence when agent-network co-evolution is taken into account.

### References

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